

**WHAT IS CLAIMED IS:**

1           1.       A method of making a camera module, comprising:  
2           providing a sensor housing comprising an image sensor, a lens holder  
3           comprising a lens, and a deformable focus adjustment structure; and  
4           deforming the focus adjustment structure to move the lens whereby light is  
5           focused onto the image sensor.

1           2.       The method of claim 1, wherein the focus adjustment structure  
2           comprises a material shrinkable in response to energy, and deforming the focus  
3           adjustment structure comprises applying energy to at least some of the shrinkable  
4           material.

1           3.       The method of claim 2, wherein the focus adjustment structure  
2           comprises heat shrink material, and deforming the focus adjustment structure  
3           comprises heating at least some of the heat shrink material.

1           4.       The method of claim 3, wherein at least some of the heat shrink  
2           material is heated by contact with a heating element.

1           5.       The method of claim 3, wherein at least some of the heat shrink  
2           material is heated by radiant energy.

1           6.       The method of claim 5, wherein at least some of the heat shrink  
2           material is heated by laser energy.

1           7.       The method of claim 2 wherein the shrinkable material is disposed  
2           uniformly about an optical axis of the lens.

1           8.       The method of claim 7, wherein energy is applied uniformly to the  
2           uniformly disposed shrinkable material to reduce a distance separating the lens  
3           and the image sensor.

1           9.       The method of claim 7, wherein energy is applied asymmetrically to  
2           the uniformly disposed shrinkable material to adjust where the optical axis  
3           intersects the image sensor.

1           10.    The method of claim 2, further comprising guiding the lens holder  
2 while applying energy to at least some of the shrinkable material.

1           11.    The method of claim 1, wherein the lens holder is a monolithic  
2 structure.

1           12.    The method of claim 1, wherein the lens holder and the sensor  
2 housing are formed as a single molding of thermoplastic material.

1           13.    A system for making a camera module, comprising:  
2           a camera module holder operable to hold a camera module comprising an  
3 image sensor disposed within a sensor housing and a lens holder attached to the  
4 sensor housing, the lens holder comprising a lens and a deformable focus  
5 adjustment structure; and  
6           a focus adjuster operable to deform the focus adjustment structure to move  
7 the lens whereby light is focused onto the image sensor.

1           14.    The system of claim 13, wherein the focus adjustment structure  
2 comprises a material shrinkable in response to energy, and the focus adjuster is  
3 operable to apply energy to at least some of the shrinkable material.

1           15.    The system of claim 14, wherein the focus adjustment structure  
2 comprises heat shrink material, and the focus adjuster is operable to heat at least  
3 some of the heat shrink material.

1           16.    The system of claim 15, wherein the focus adjuster comprises a  
2 heating element operable for heating at least some of the heat shrink material.

1           17.    The system of claim 15, wherein the focus adjuster comprises a  
2 radiant energy source for heating at least some of the heat shrink material.

1           18.    The system of claim 17, wherein the focus adjuster comprises a  
2 laser for heating at least some of the heat shrink material with laser energy.

1           19.    The system of claim 14 wherein the shrinkable material is disposed  
2 uniformly about an optical axis of the lens and the focus adjuster is operable to

3 uniformly apply energy to the uniformly disposed shrinkable material to reduce a  
4 distance separating the lens and the image sensor.

1 20. The system of claim 14 wherein the shrinkable material is disposed  
2 uniformly about an optical axis of the lens and the focus adjuster is operable to  
3 asymmetrically apply energy to the uniformly disposed shrinkable material to  
4 adjust where the optical axis crosses the image sensor.

1 21. A camera module, comprising:  
2 an image sensor disposed within a sensor housing;  
3 a lens holder comprising a lens; and  
4 a focus adjustment structure disposed between the lens holder and the  
5 sensor housing, wherein the focus adjustment structure is deformed whereby light  
6 passing through the lens is focused onto the image sensor.

1 22. The camera module of claim 21, wherein the lens holder and the  
2 focus adjustment structure are sections of a monolithic structure, the lens holder  
3 and the focus adjustment structure comprising regions of material with similar  
4 chemical compositions but different internal structural arrangements.

1 23. The camera module of claim 22, wherein at least one region of the  
2 focus adjustment structure corresponds to a deformed version of a region of the  
3 lens holder.

1 24. The camera module of claim 22, wherein the at least one region of  
2 the focus adjustment structure corresponds to a heat shrunk version of a heat  
3 shrinkable region of the lens holder.

1 25. The camera module of claim 22, wherein the monolithic structure is  
2 formed of a thermoplastic material and the focus adjustment structure and the  
3 lens holder are characterized by different respective cross-linking densities.

1 26. The camera module of claim 21, wherein the lens holder comprises  
2 an exterior deformation inhibiting layer and the focus adjustment structure is free  
3 of any exterior deformation inhibiting layer.

1           27.    The camera module of claim 26, wherein the exterior deformation  
2   inhibiting layer is substantially thermally conductive.

1           28.    The camera module of claim 26, wherein the exterior deformation  
2   inhibiting layer is substantially reflective of radiation capable of deforming at least  
3   some regions of the lens holder.

1           29.    The camera module of claim 21, wherein the lens holder, the focus  
2   adjustment structure, and the sensor housing are formed as a single molding of  
3   thermoplastic material.